

REMARKS

Claims 1-19 are pending in the application. Claims 1-12 are rejected. Claims 1 and 4 are amended. Claims 13-19 are withdrawn from consideration on the basis of an election made by the Applicants in response to a restriction requirement. Applicants have cancelled claims 9, 11 and 12.

Drawings

Applicants note that the Examiner has accepted the omitted drawings, which were filed in a Preliminary Amendment on March 2, 2004. At that time, Applicants noted that the only number included in the figures and not in the original specification is the number "6". Applicants offered to delete the reference number if required by the Examiner. The Examiner has indicated that the number may be retained if Applicants properly describes it in the specification. Applicants will submit an appropriate statement to be inserted into one or more places of the specification that would refer to the reference number 6 for each of the Figures 1a, 1b, 2a, 2b and 2c, upon an indication of allowable subject matter.

Election/Restrictions

The Examiner acknowledges Applicants election of group I, claims 1-12, for examination. The Applicants election has been treated an election without traverse.

Claim Objections

Claim 11 is objected to because it recites "a multi-player sheet". The Examiner correctly notes that it should be a multi-layer sheet." However, the objection is moot in view of the cancellation of the claim.

Claim Rejections - 35 U.S.C. § 112

Claim 4 is rejected under 35 U.S.C. § 112, second paragraph as being indefinite.
This rejection is traversed for at least the following reasons.

The Examiner notes that claim 4 recites a "first layer" at line 24 but finds insufficient antecedent basis for this limitation. The Examiner interprets the phrase "first layer" as "first

film". Applicants agree that the Examiner is correct in this regard and have amended claim 4 accordingly.

Claim Rejections - 35 U.S.C. § 102/103

Claims 1-12 are rejected under 35 U.S.C. § 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Nagamoto et al (6,156,423). This rejection is traversed for at least the following reasons.

First, as to claims 9, 11 and 12, the rejection is moot in view of the cancellation of these claims.

Second, on a substantive basis, Applicants have amended claim 1 to specifically point out that the first film is laminated on one side of the composite film and that a pressure sensitive adhesive layer is formed on the other side of the composite film.

Third, Applicants note that other limitations in the claims further distinguish the invention from the prior art. Specifically, the present invention is a pressure-sensitive adhesive sheet which comprises (1) a **composite film** consisting of a composition containing (a) urethane polymer and (b) a vinyl polymer, (2) a **first film** comprising material different from that of the composite film and (3) a pressure sensitive **adhesive layer**. Figs. 2A-2C illustrate several adhesive sheets arrangements of these materials. Claim 1, the only independent claim under rejection, is further limited by specifying that the sheet has a modulus of 9 N/mm² or more and 250 N/mm² or less. The claim specifies that the modulus is determined when an oblong piece of the pressure sensitive adhesive sheet with a width of 20 mm is bent at a radius of curvature of 3.0 mm, for example, according to the arrangement illustrated in Fig. 3.

The dependent claims further specify the compositions of the composite film, including the use of an acrylic polymer (claim 3), a radical polymerizable monomer (claim 4), which is an acrylic monomer (claim 5). The composition of the composite film 2 is specifically disclosed at pages 12-19 from the present application. Claim 6 specifies that the composite film itself has a particular storage modulus at different temperatures, as disclosed at pages 21-22 of the specification. Claims 8 and 10 specify the thickness of the first film and second film, as

disclosed at pages 34-35, where it also teaches that the thickness of the adhesive layer may be "optionally set".

Nagamoto et al

The Examiner asserts that Nagamoto et al teaches the claimed structure of an adhesive tape, including a first layer, composite layer and adhesive layer for use in a semiconductor manufacturing operation (col. 1, lines 6-10). The Examiner equates the film layer 1 to Applicants' **composite film** and equates the barrier layer 2 to Applicants' **first film**. The film layer 1 and barrier layer 2 are different compositions and one may be coated with an adhesive layer 4 to form an adhesive tape 5, as illustrated in Fig. 2 and disclosed at col. 3, lines 60-65 and col. 5, lines 49-51. These portions also teach that the film layer 1 and barrier layer 2 may be laminated.

With regard to the composition of these various films, the Examiner finds that the film layer 1 may be made of a urethane (meth) acrylate oligomer that is commercially available (col. 6, lines 30 and 62) and finds that the barrier layer 2 may be composed of PET, as disclosed at col. 4, lines 58-64.

The Examiner recognizes that Nagamoto et al does not explicitly teach the claimed property of the modulus as set forth in claims 1, 2 and 11. However, the Examiner asserts that such property is necessarily present in the invention, particularly based upon the use of common materials in both Nagamoto et al and the present specification as explained at page 4 of the Office Action. Further, the Examiner points to the use of a variety of acrylic based pressure-sensitive adhesives, as disclosed at page 25 of the specification, which are common to those taught in Nagamoto et al with regard to other prior art references that are disclosed at col. 5, lines 51-55.

Notwithstanding the foregoing analysis, Applicants respectfully submit that the layer-construction of the claimed invention is different from the layer-construction of Nagamoto et al. The layer-construction of the present invention has a first layer (ex.PET), a complex layer (ex.acrylurethane) and a pressure-sensitive adhesive layer. On the other hand the layer-

construction of Nagamoto et al is a film layer (ex.acrylurethane), a barrier layer (ex.PET) and a pressure sensitive adhesive layer.

When silicon wafers processed by using the pressure-sensitive adhesive sheet having the pressure-sensitive adhesive layer formed on the side of acrylurethane layer such as the present invention, a sag of the silicon wafers is smaller than that when the pressure-sensitive adhesive sheet having a layer-construction of Nagamoto et al is used. A PET layer/an acrylurethane layer/a pressure-sensitive adhesive layer/a silicon wafer shows a truss-structure. Here, a PET layer and a silicon wafer are respectively hard layers, an acrylurethane layer and a pressure-sensitive adhesive layer are respectively soft layers. In the layer-construction of the present invention there are two soft layers (the acryl urethane layer and the pressure-sensitive adhesive layer) between the PET layer as a hard layer and the silicon wafer as a hard layer. This arrangement is extremely strong.

On the other hand, in the layer-construction of Nagamoto et al, there is only a pressure-sensitive adhesive layer as a soft layer between PET and a silicon wafer. Thus, the layer-construction of Nagamoto et al does not provide sufficient additional strength.

Conclusion

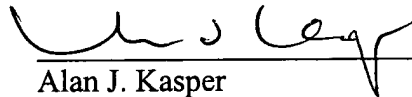
In sum, the teachings of Nagamoto et al are distinguishable from the present invention as recited in claim 1, and as further defined by the dependent claims.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

Amendment Under 37 C.F.R. § 1.111
U.S. Application No. 10/625,527

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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